The Canal Prism: Variable and Dangerous
(from June 2013 Along The Towpath)

Accompanied by the Past by Karen Gray

History is the witness that testifies to the passing of time; it illumines reality, vitalizes memory, provides guidance in daily life, and brings us tidings of antiquity. Marcus Tullius Cicero (106 BCE–43 BC3), Pro Publio Sesto

On September 10, 1828, C&O Canal Company president Charles Fenton Mercer reported to stockholders that the board had decided that:

The breadth of the Canal, where practicable, without a very enlarged expenditure, they have fixed at sixty feet, for the surface of the water, its depth, for the present, at never less than five, but, ultimately, at six feet. Its narrowest breadth at the surface, (and this will but seldom occur,) will be fifty feet. Its breadth, at bottom, (generally forty-two feet) will depend upon the quality of the earth through which the canal passes, and the facilities afforded for the inner pavement of its slopes, as it progresses.1

However, at the beginning of construction the typical contract for a section of the prism specified that:

The Canal will be sixty feet wide at the water-line and six feet deep below it, with such slope as an Engineer of the Company, or the President and Directors shall order with a towing path, at least twelve feet wide at top, on an embankment of such height as the Engineer may direct, the cost of the embankment not to be estimated, unless the earth therefore has been necessarily transported farther than 120 feet. The surface of the bank opposite the towing-path may be required to be eight feet wide, or wider, if deemed necessary; and all slopes near the side of the canal shall have their inclination determined by the Engineer, who shall also point out the place from which materials for embankment may be taken.

It should be noted immediately that the canal prism is not a simple “ditch” but a major structure that frequently is above the surrounding terrain through which it passes because of the necessity for the prism to be level between locks. Consequently, as the land it traverses rose and fell, the prism was built on top of the surface (sometimes a considerable height above), or excavated through it as necessary. In some places a ledge was built on which the canal was then constructed—as on Marys Wall and the Log Wall below Great Falls or through the narrows between Point of Rocks and Harpers Ferry. Often the canal is carried on a high embankment across the mouth of a small valley visible on the canal’s land (versus river) side. Such situations necessitate a canal culvert to carry water from the valley’s watershed through the embankment to the Potomac River.

Typical canal prism construction at Candoc - Photo by Steve Dean

As construction progressed, increasingly complex instructions for building the prism were developed to cover such details as disposing of the spoil and the distance it would be transported before a special payment would be made to the contractor for carrying it further. Given that specifications always stated that adjustments to the contracts could be made with the permission of the engineers or the canal company president and/or directors as necessary — and such agreements seem not to have been put in writing.
(or if they were, to have been kept), there is no way to know when deviations from the standard specifications were allowed.

An example of an adjustment to the basic specifications was noted by Colonels John J. Abert and James Kearney in their report on the initial construction of the canal. They indicated that:

The width of the canal up to Frederick street (now 34th Street in Georgetown) is forty-six feet, and its depth six; from this street it gradually widens to eighty feet, and increases in its depth to seven, which it maintains through the remaining part of this level up to Lock No. 5 . . . . The great dimensions of the canal heretofore stated, terminate at this lock, beyond which the width at the water surface is sixty feet, and the depth six.2

Above Harpers Ferry and up to Dam 5, the width of the canal was reduced to 50 feet as an economy measure and in response to the increasingly rugged nature of the land.3

In reality, the width and depth of the prism appears to have varied not only with the nature of the terrain when it was constructed, but also with the changes that occurred over time. Contributing to those changes were siltation, slumping of the berms or falling of material from berm-side cliffs or steep slopes, and reconstruction of some sections to different specifications from those that had governed their original construction.

Also, the canal company often was not able to maintain a six-foot depth. Records in the mid-1870s, reveal that boats rarely traveled at full capacity (130 tons) and instead usually carried about 110–120 tons a fact that suggests that the canal may have had a depth less than the ideal six feet. It is true that, the 1908 Inland Waterways Preliminary Report on the canal states:

The canal varies in width at the surface from 55 to 65 feet, and from 30 to 42 feet at the bottom, and is constructed for a depth of 6 feet throughout.4

This should not be regarded as invariable fact, however, as the report contains some errors and likely represents the most general and positive terms used by the Chesapeake and Ohio Canal Transportation Company (which managed the canal under contract with the receivers after January 1, 1896). Ultimately however, whatever compromises to the width and depth of the prism were made initially and over time, the bottom could not be less than 30 feet wide if two boats of the maximum size, as determined by the usable space in the locks, were to pass each other.

Although the prism may seem shallow and narrow by comparison with larger bodies of water, it was extremely dangerous for those who could not swim. Newspaper reports frequently documented drownings in the canal as the selected accounts below indicate.

In the August 20, 1846, Hagerstown Torchlight: “We understand that Mr. James Hannah, of the Clearspring District, on Tuesday last, while crossing one of the “Four Locks” of the Canal, above Clearspring, fell into the Canal and was drowned before anyone could come to his assistance. John G. Stone, Esq. hurried to his assistance as soon as possible, but was too late to save him.”

In the January 16, 1850, Hagerstown Herald of Freedom: “A Correspondent of the Mail, writing from Hancock, states, that the body of William Watkins, who had been working at Shafer’s Cement Mill some time back, was found in the Chesapeake and Ohio Canal, on the 6th inst[ant] — Watkins had been missing ever since the evening of the 8th ult[imate]; and he frequently said before his death that he came from Frederick county in this State, where, as he stated, he has a mother, brothers and sisters residing. A Coroner’s Inquest was held, which returned a verdict of ‘Accidental Drowning.’”
In the August 15, 1861, Cumberland Alleganian: “A Fight and two Men Drowned. — On Sunday last, as a boat was passing through the Four Locks below the Tunnel, a fight sprang up on board between a white man named Snyder, attached to one of the boats, and George a negro belonging to the estate of Henry Bevans, dec[ease]d. The origin of the difficulty is of no importance, but the fight was commenced with such hearty good will, that in a short time the two combatants found themselves in the lock. Upon rising to the surface, they renewed the struggle in the water, and carried it on so fiercely that in a short time both sunk to rise no more in life. Their bodies were afterwards found in the lock.”

In the June 26, 1867, Cumberland Alleganian: “A youth named Keogel, aged about fifteen years, and who resided with his father in this city, was accidentally drowned in the Canal, near Georgetown, on Friday last. He was employed on the boat of Mr. George Rossworm. His remains were brought hither and interred on Monday.”

In the September 25, 1874, Hagerstown Weekly Mail: “Child Drowned — A distressing incident. — Early on Friday morning of last week, Wm. Sherman Benner, about 9 years old, the son of Mr. Frank Benner, of Sharpsburg, fell from his father’s boat into the canal near Weverton, and was drowned. Mr. Benner had told the little boy to go in to the feed room of the boat for something, and on running in he struck his head against the top of the door with such force as knocked him overboard. The poor father’s feelings on this occasion can be better imagined than described. He was within a few yards of his little son, and listening to his frantic and agonizing cries for help, and after seeing him rise to the surface several times, finally sink forever into his watery grave, and he, through his inability to swim, unable to extend a hand to save him, or give the assistance so pitifully cried for. The body was afterwards recovered by Mr. Jno. Barnhart, of Sandy Hook, and it was brought up to Sharpsburg on the afternoon train on Friday.”

In the June 29, 1878, Cumberland Alleganian: “Mrs. Weston, the wife of a lock-tender of Middle Lock at the tunnel [i.e. Lock 64] on the line of the Chesapeake and Ohio Canal, is reported to have gone out on Tuesday night about dusk to attend to her husband’s duties, he being indisposed at the time. Her protracted absence created some alarm, and about 11 o’clock a suspicion arose that she may have fallen into the lock and drowned. The water was searched that night, but failed to develop anything concerning her whereabouts, and on Wednesday morning the water was drawn off, when her lifeless body was discovered in the canal upon the short level below the lock.”

In the November 14, 1878, Cumberland Alleganian: “Thursday last Miss Ann Shanks, aged about seventeen years, residing at McCoy’s Ferry, left her home to make a visit to her sister, residing at the “Four Locks,” about 110 miles above Georgetown. After making her visit she started to return home, and while walking along the edge of the tow-path she missed her footing, fell into the canal, and was drowned. The young lady was missed from her home and diligent search was made for her, but without avail, until yesterday morning when Captain Lindsey, of one of the canal boats, while passing, raised the body with his tow line. Wash. Rep.”

In the July 12, 1912, Keyser Tribune: Dewey Kelbaugh, 14 years old, son of John Kelbaugh, inspector of the B&O freight yard at Brunswick, was drowned in the Chesapeake and Ohio Canal at Knoxville Md, Fri while bathing. With several companions the lad got into a leaky boat and jumped into the water beyond his depth. His companions made an effort to save him. The boat swamped and the youths swam to shore. Later the body was found on the bottom standing erect.”
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Resources:


Notes:

1. Proceedings of the President and Board of Directors, A, p. 70–71.


3. Proceedings of the President and Board of Directors, A, p. 80

4. Preliminary Report of the Inland Waterways Commission, Feb. 26, 1908. (Available on Google books.) An example of a clear error is the report’s statement that 78 locks overcome an elevation change of 609.7 feet. In reality, of course, only 74 of the canal locks are lift locks constructed to overcome the elevation change from tidewater to Cumberland. In addition to those, the canal has one tidelock, seven inlet locks, and four river locks (counting the Edwards Ferry staircase locks as two locks) for a total of 86 locks.